

EOS Production Sites Network Performance Report

This is a monthly summary of EOS network performance testing between production sites for March 2007 -- comparing the measured performance against the requirements.

Highlights:

- Highly stable flows
- Only 1 flow below "Good": GSFC GES DAAC to EROS
 - Mostly due to congestion at GSFC between EBnet and Doors
 - (would rate "Good" from test node directly connected to MAX)
- LaRC ECS DAAC moved to campus LAN, using campus address space
 - No major performance impact
 - User Flow data no longer available!
- Requirements Basis:
 - December '03 requirements from BAH.
 - Updated to handbook 1.4.1 (3/22/06)
 - Additional Updates Incorporated:
 - New AIRS reprocessing flows (8/06)
 - GEOS requirements – Flows began in Nov '06
 - All LaRC "Backhaul" Requirements removed
 - Extension of TRMM, QuikScat missions
- Significant changes in testing are indicated in Blue, Problems in Red

Ratings Changes: None!

Upgrade: ↑:

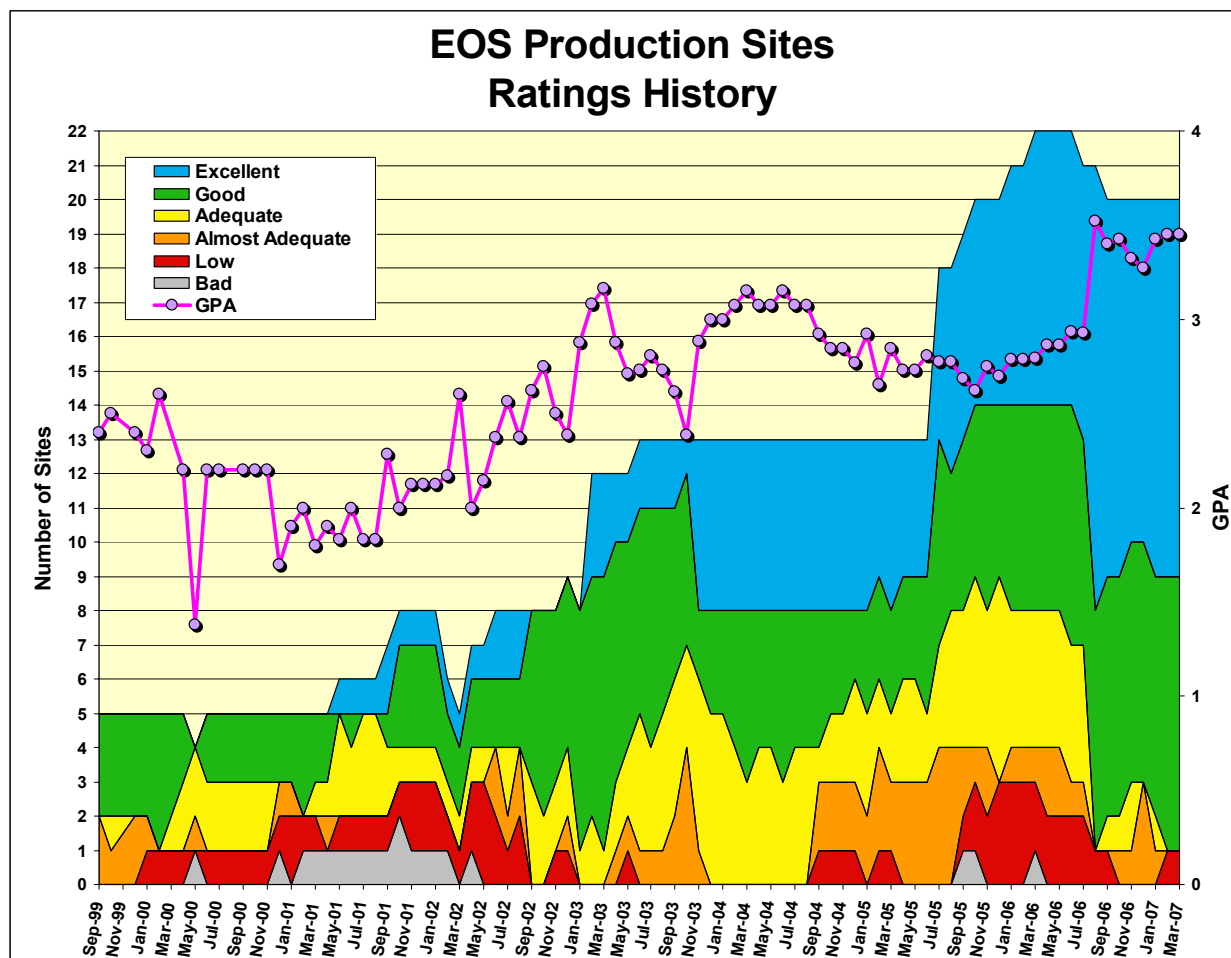
Downgrade: ↓ :

(See site discussion below for details)

Ratings Categories:

Rating	Value	Criteria
Excellent:	4	Total Kbps > Requirement * 3
Good:	3	1.3 * Requirement <= Total Kbps < Requirement * 3
Adequate:	2	Requirement < Total Kbps < Requirement * 1.3
Almost Adequate:	1.5	Requirement / 1.3 < Total Kbps < Requirement
Low:	1	Requirement / 3 < Total Kbps < Requirement / 1.3
Bad:	0	Total Kbps < Requirement / 3

Where Total Kbps = Integrated Kbps (where available), otherwise just iperf

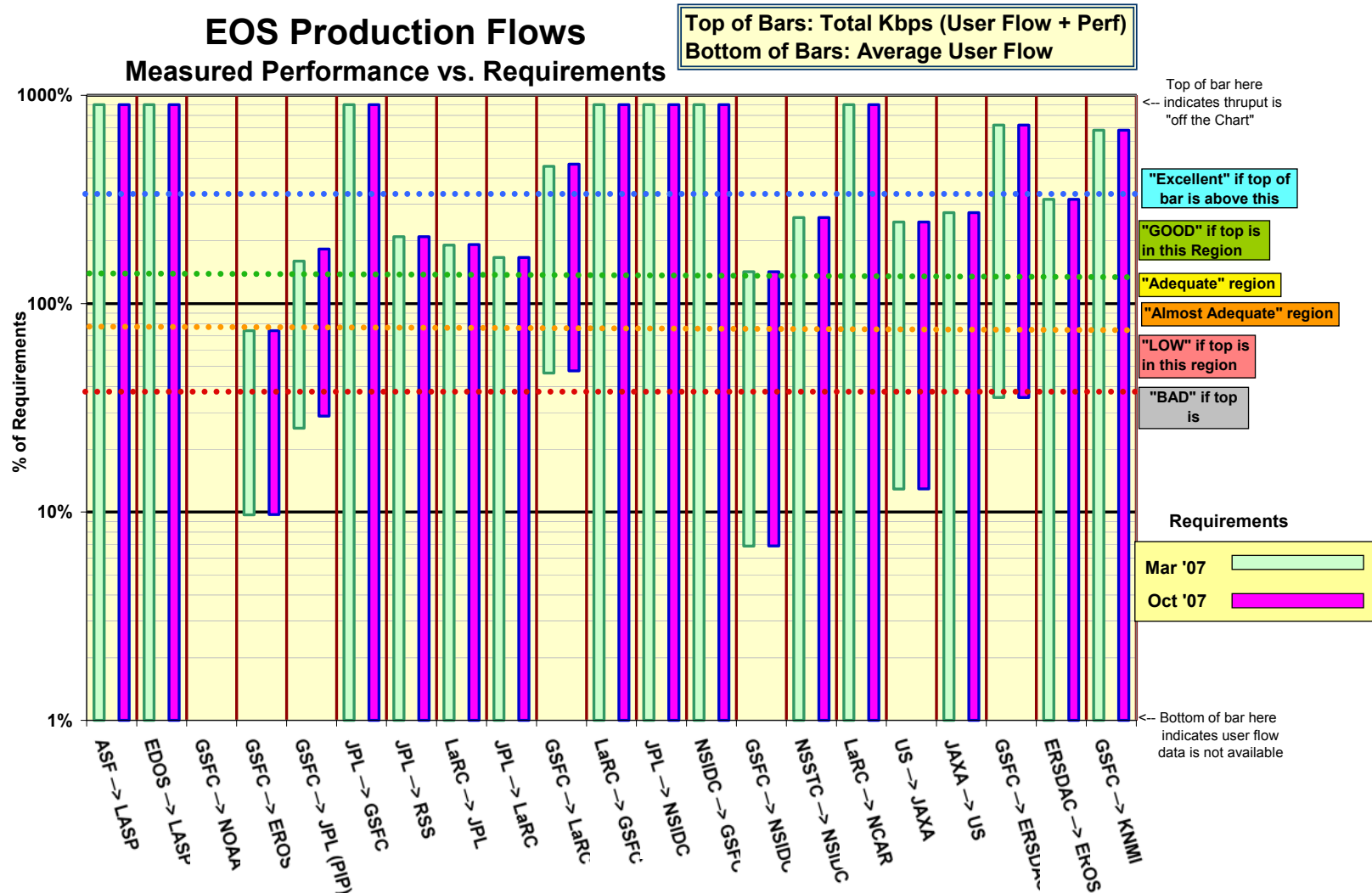
Ratings History:

The chart above shows the number of sites in each classification since EOS Production Site testing started in September 1999. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements.

Network Requirements vs. Measured Performance

March 2007		Requirements (mbps)		Testing					Ratings		
Source → Destination	Team (s)	Current	Future	Source → Dest Nodes	Avg User Flow mbps	iperf Avg mbps	Total Avg mbps	Integrated mbps	Rating re Current Requirements		Rating re
		Mar-07	Oct-07						Mar-07	Last Month	Oct-07
GSFC → ASF	QuikScat, Radarsat	n/a	n/a	GSFC-CSAFS → ASF	n/a	n/a	n/a		n/a	n/a	n/a
ASF → LASP	QuikScat	0.02	0.02	ASF → LASP [via IOnet]	n/a	1.09	1.09		Excellent	E	Excellent
EDOS → LASP	ICESat, QuikScat	0.4	0.4	EDOS → LASP [via IOnet]	n/a	16.6	16.6		Excellent	E	Excellent
GSFC → NOAA	QuikScat	0.0	0.0	n/a	n/a	n/a	n/a		n/a	n/a	n/a
GSFC → EROS	MODIS, LandSat	285.4	285.4	GDAAC → EROS LPDAAC	27.7	202.6	230.2	211.6	LOW	L	LOW
GSFC → JPL (PIP)	AIRS, ISTs	46.3	40.5	GDAAC → JPL-AIRS	11.7	72.4	84.1	74.1	GOOD	G	GOOD
JPL → GSFC	AMSR-E, MISR, etc.	7.4	7.4	JPL-PTH → GSFC-PTH	n/a	89.1	89.1		Excellent	E	Excellent
JPL → RSS	AMSR-E	2.5	2.5	JPL-PODAAC → RSS	n/a	5.2	5.2		GOOD	G	GOOD
LaRC → JPL	TES, MISR	39.9	39.6	LARC-DAAC → JPL-TES	n/a	76.0	76.0		GOOD	G	GOOD
JPL → LaRC	TES	52.6	52.6	JPL-PTH → LARC-PTH	n/a	87.6	87.6		GOOD	G	GOOD
GSFC → LaRC	CERES, MISR, MOPITT	68.7	67.2	GDAAC → LDAAC	32.0	301.7	333.7	313.5	Excellent	E	Excellent
LaRC → GSFC	MODIS, TES	0.2	0.2	LDAAC → GDAAC	n/a	221.5	221.5		Excellent	E	Excellent
JPL → NSIDC	AMSR-E	1.3	1.3	JPL-PTH → NSIDC SIDADS	n/a	88.7	88.7		Excellent	E	Excellent
NSIDC → GSFC	MODIS, ICESAT, QuikScat	13.3	13.3	NSIDC DAAC → GDAAC	0.1	121.7	121.8	121.7	Excellent	E	Excellent
GSFC → NSIDC	MODIS, ICESAT, QuikScat	64.1	64.1	GDAAC → NSIDC-DAAC	4.4	91.3	95.7	91.3	GOOD	G	GOOD
NSSTC → NSIDC	AMSR-E	7.5	7.5	NSSTC → NSIDC DAAC	n/a	19.4	19.4		GOOD	G	GOOD
LaRC → NCAR	HIRDLS	5.4	5.4	LDAAC → NCAR	n/a	113.1	113.1		Excellent	E	Excellent
US → JAXA	QuikScat, TRMM, AMSR	2.0	2.0	GSFC-EDOS-Mail → JAXA DDS	0.3	4.8	5.1	4.9	GOOD	G	GOOD
JAXA → US	AMSR-E	1.3	1.3	JAXA DDS → JPL-QSCAT	n/a	3.5	3.50		GOOD	G	GOOD
GSFC → ERSDAC	ASTER	12.5	12.5	ENPL-PTH → ERSDAC	4.4	89.0	93.4	89.5	Excellent	E	Excellent
ERSDAC → EROS	ASTER	26.8	26.8	ERSDAC → EROS PTH	n/a	84.9	84.9		Excellent	E	Excellent
GSFC → KNMI	OMI	3.3	3.3	GSFC-OMISIPS → OMI-PDR	n/a	22.3	22.3		Excellent	E	Excellent
Notes:		Flow Requirements include:						Ratings			
		TRMM, Terra, Aqua, Aura, ICESAT, QuikScat, GEOS						Summary			
								Mar-07	Req	Oct-07	
								Score	Prev	Score	
*Criteria:	Excellent	Total Kbps > Requirement * 3						Excellent	11	11	11
	GOOD	1.3 * Requirement <= Total Kbps < Requirement * 3						GOOD	8	8	8
	Adequate	Requirement < Total Kbps < Requirement * 1.3						Adequate	0	0	0
	Almost Adequate	Requirement / 1.3 < Total Kbps < Requirement						Almost Adequate	0	0	0
	LOW	Requirement / 3 < Total Kbps < Requirement / 1.3						LOW	1	1	1
	BAD	Total Kbps < Requirement / 3						BAD	0	0	0
								Total	20	20	20
								GPA	3.45	3.45	3.45

This graph shows two bars for each source-destination pair. Each bar uses the same actual measured performance, but compares it to the requirements for two different times (February '07 and October '07). Thus if the requirements increase, the same measured performance will be lower in comparison.



Interpretation: The bottom of each bar is the average measured user flow to a site. Thus the bottom of each bar indicates the relationship between the requirements and actual flows. Note that the requirements include a 50% contingency factor above what was specified by the projects, so a value of 66% would indicate that the project is flowing as much data as requested. The top of each bar represents the integrated measurement – this value is used to determine the ratings.

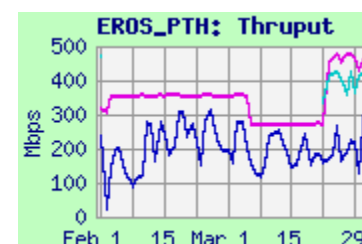
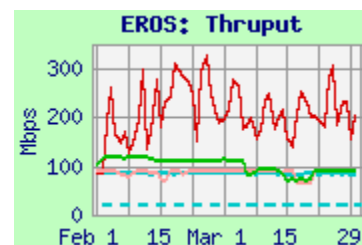
1) EROS:

Ratings: GSFC → EROS: Continued **Low**
 ERSDAC → EROS: Continued **Excellent**

Web Page: <http://ensight.eos.nasa.gov/Organizations/production/EROS.shtml>
http://ensight.eos.nasa.gov/Organizations/production/EROS_PTH.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
GSFC-DAAC → EROS LPDAAC	256.2	202.6	81.7	27.7	211.6
GSFC-PTH → EROS PTH	264.7	187.8	49.3		
GSFC-ENPL → EROS PTH	482.0	466.5	345.1		
GSFC-CNE → EROS PTH via NISN	422.7	412.0	176.8		
ERSDAC → EROS	87.3	84.9	73.9		
NSIDC → EROS	82.6	80.2	75.9		
LaRC → EROS	92.4	92.0	74.9		
EROS LPDAAC → GSFC DAAC	139.1	122.7	69.4		
EROS PTH → GSFC PTH	440.9	414.6	368.5		

**Requirements:**

Source → Dest	Date	mbps	Rating
GSFC → EROS	→ Mar '08	285	Low
ERSDAC → EROS	FY '06, '07	26.8	Excellent

Comments:

GSFC → EROS: The rating now uses the DAAC to DAAC measurement, rather than from GSFC-ENPL, since the DAAC to DAAC measurement is more relevant to production. There is often significant congestion on the EBnet to Doors Gig-E circuit (in use from GDAAC and GSFC-PTH). This month the congestion was increased due to GSFC DAAC to JPL for GEOS and AIRS reprocessing flows. This congestion reduces the thruput from GDAAC and GSFC-PTH (in comparison to GSFC-ENPL).

The user flow this month was about the same as last month, but is still far below the recent averages. This reduction may be due to the use of compression on the MODIS collection 5 data (began at the end of 2006). The user flow had only a small contribution to the integrated measurement on which the rating is based. The rating remains "Low"

The GSFC-ENPL host has a direct connection to the MAX, bypassing the congested EBnet to Doors Gig-E circuit, and does not experience similar congestion to the DAAC. Thus it more fully demonstrates the capability of the wide area network. The drop in early March is due to the increased RTT due to a provider rerouting between EROS and Chicago. The improvement in late March is due retuning of the test parameters – the values above represent the performance AFTER retuning. From ENPL, the performance would be rated "Good".

A new test was added this month, from GSFC to EROS-PTH, via the NISN WANR backbone to the Chicago CIEF, then via a Gig-E connection to Starlight, where it peers with the EROS OC-12 (622 mbps). The results from this test show that this circuit is approximately equivalent to the current Abilene route.

ERSDAC → EROS: The median thruput from ERSDAC to EROS-PTH (in support of the ASTER flow) was stable on the APAN / Abilene route (limited by the ERSDAC 100 mbps tail circuit), and is more than 3 times the 26.8 mbps requirement, resulting in an "Excellent" rating.

NSIDC → EROS: The median thruput from NSIDC-SIDADS to EDC-PTH dropped from a median of 112 mbps this month, due to the increased RTT from the carrier's circuit rerouting.

LaRC → EROS: The thruput from LaRC-PTH to EDC-PTH was stable this month.

EROS → GSFC: The thruput for tests from EROS to GSFC (both DAAC to DAAC and PTH to PTH) were mostly stable this month, but note that the DAAC to DAAC flow cannot use a significant portion of the WAN capability.

2) JPL:

2.1) JPL ↔ GSFC:

Ratings: GSFC → JPL: Continued **Good**

JPL → GSFC: Continued **Excellent**

Web Pages:

http://ensight.eos.nasa.gov/Missions/aqua/JPL_AIRS.shtml

http://ensight.eos.nasa.gov/Organizations/production/JPL_QSCAT.shtml

http://ensight.eos.nasa.gov/Organizations/production/JPL_PODAAC.shtml

Test Results:

Source → Dest	NET	Medians of daily tests (mbps)			User Flow	Integrated
		Best	Median	Worst		
GSFC-DAAC → JPL-AIRS	PIP	85.5	72.4	32.3	11.7	74.1
GSFC-CNE → JPL-AIRS	SIP	85.7	75.1	49.8		
GSFC-PTH → JPL-QSCAT	PIP	85.4	72.1	29.4		
GSFC-PTH → JPL-PODAAC	PIP	91.0	84.5	46.8		
GSFC-CNE → JPL-MISR	SIP	71.0	50.6	15.2		
JPL-PTH → GSFC PTH	PIP	89.2	89.1	63.5		
JPL-PODAAC → GSFC DAAC	PIP	39.7	34.2	11.5		

Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → JPL Combined	March '07	46.3	Good
JPL → GSFC combined	CY '06-09	7.4	Excellent

Comments:

GSFC → JPL:

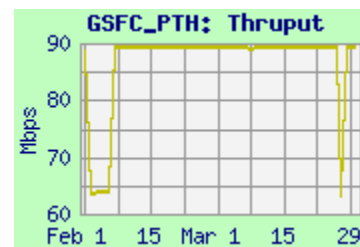
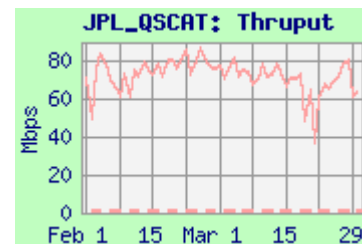
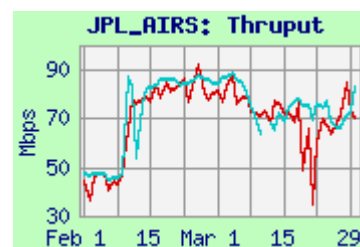
AIRS: Performance from GSFC (DAAC and CNE) to JPL-AIRS had dramatically improved with the NISN SIP WANR upgrade in April '06. The testing was retuned in early February, resulting in a significant improvement. There is now a 2.6:1 ratio of daily best to daily worst from GDAAC, due to EBnet to Doors congestion at GSFC (note the higher daily worst value from the CNE node, which is not subject to this congestion). The combined requirement drops from 57.6 mbps last month, due to lower GEOS flows to MLS (testing from GSFC to MLS will be added next month). The rating remains "Good".

QSCAT: Thruput from GSFC-PTH decreased slightly this month, probably due to increased EBnet to Doors congestion.

PODAAC: Thruput from GSFC-PTH was very stable this month.

MISR: Testing from GSFC-CNE was also retuned in early February, resulting in a significant improvement – median thrupt was about 27 mbps before that.

JPL → GSFC: The previous JPL-PODAAC to GSFC-DAAC testing was replaced by JPL-PTH to GSFC-PTH testing to better reflect the network capabilities. The rating remains "Excellent".



2.2) JPL ↔ LaRC

Ratings: LaRC → JPL: Continued
JPL → LaRC: Continued

Good
Good

Web Pages:

http://ensight.eos.nasa.gov/Organizations/production/JPL_TES.shtml

http://ensight.eos.nasa.gov/Missions/terra/JPL_MISR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
LaRC DAAC → JPL-TES	85.8	76.0	44.8
LaRC PTH → JPL-TES	88.8	83.3	59.5
LaRC PTH → JPL-TES sftp	1.79	1.78	1.59
LaRC PTH → JPL-MLS	90.1	82.9	59.2
LaRC PTH → JPL-PTH sftp	14.0	14.0	8.1
LaRC DAAC → JPL-MISR	63.1	46.2	15.7
JPL-PTH → LaRC PTH	88.3	87.6	59.4

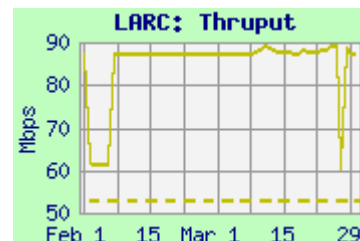
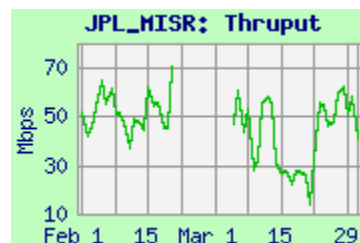
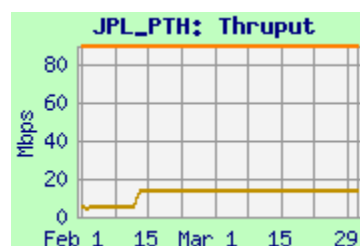
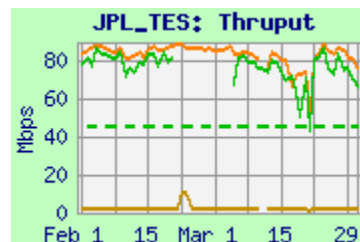
Requirements:

Source → Dest	Date	Mbps	Rating
LaRC DAAC → JPL-TES	FY '07	29.8	Good
LaRC DAAC → JPL-MISR	FY '07	18.5	Good
LaRC DAAC → JPL-Combined	FY '07	45.8	Good
JPL → LaRC	FY '07	52.6	Good

Comments: LDAAC was moved to campus address space in March. User flow data is no longer available from LaRC (has been requested but not approved).

LaRC → JPL: Performance remained stable, with the LaRC diurnal variation fixed in January. The combined requirement increased in November '06, with the addition of GEOS flows (was 39.6 mbps previously). The rating remains "Good". Sftp results are much lower than iperf, due to TCP window limitations. A patch to increase this window was installed in mid Feb, improving performance to JPL-PTH, but only temporarily to JPL-TES (under investigation).

JPL → LaRC: This requirement is for TES products produced at the TES SIPS at JPL, being returned to LaRC for archiving. The measured thrupt was stable this month. The rating remains "Good".

**2.3) ERSDAC → JPL ASTER IST**

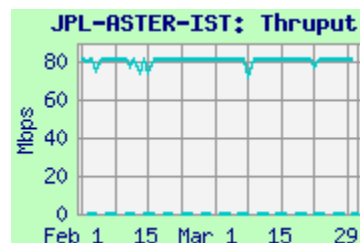
Rating: Continued **Excellent**

Web Page: http://ensight.eos.nasa.gov/Organizations/production/JPL_PTH.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ERSDAC → JPL-ASTER-IST	82.1	81.6	55.6

Comments: This test was initiated in March '05, via APAN replacing the EBnet circuit. The typical 82 mbps must be well in excess of the requirements (IST requirements are generally 311 kbps).



3) Boulder CO:

3.1) GSFC \leftrightarrow NSIDC DAAC:

Ratings: NSIDC \rightarrow GSFC: Continued **Excellent**

GSFC \rightarrow NSIDC: Continued **Good**

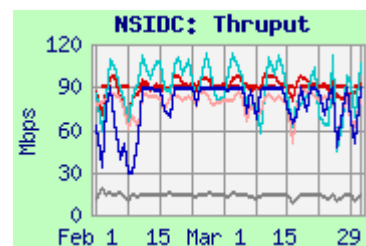
Web Page: <http://ensight.eos.nasa.gov/Organizations/production/NSIDC.shtml>

Test Results:

Source \rightarrow Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
GSFC-DAAC \rightarrow NSIDC-DAAC	105.9	91.3	38.7	4.4	91.3
GSFC-PTH \rightarrow NSIDC-DAAC	96.4	80.5	36.6		
GSFC-ISIPS \rightarrow NSIDC (iperf)	112.7	84.7	25.8		
GSFC-ISIPS \rightarrow NSIDC (ftp)	21.7	13.6	6.9		
NSIDC DAAC \rightarrow GSFC-DAAC	123.8	121.7	55.6		
NSIDC \rightarrow GSFC-ISIPS (iperf)	84.5	82.5	46.7		

Requirements:

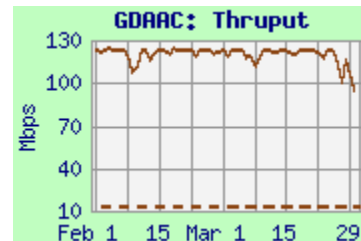
Source \rightarrow Dest	Date	Mbps	Rating
GSFC \rightarrow NSIDC	CY '07	64.1	Good
NSIDC \rightarrow GSFC	CY '06 – '07	13.3	Excellent



Comments: GSFC \rightarrow NSIDC: This rating is based on testing from GDAAC to the NSIDC DAAC. The iperf and integrated thrupt values were stable this month. This requirement varies from month to month, based on planned ICESAT reprocessing. This month the reprocessing **IS NOT** included. The Integrated thrupt is above this lower requirement by more than 30%, so the rating remains “Good”. “Adequate”. Note that in November and December ‘06 the reprocessing **was** included – the requirement was higher (78 mbps), so the same performance would have only rated “Adequate”.

NSIDC \rightarrow GSFC: Performance from NSIDC to GSFC remained stable, after improving dramatically with the NISN WANR upgrade in August ‘06; the rating remains “Excellent”.

GSFC-ISIPS \leftrightarrow NSIDC: Performance between ISIPS and NSIDC is at nominal levels for the circuit capacity. Iperf thrupt was much higher than ftp due to window size limitations.



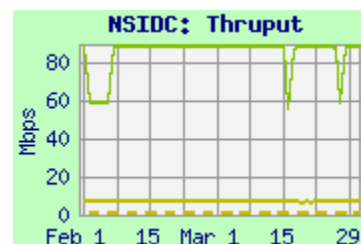
3.2) JPL \rightarrow NSIDC:

Ratings: JPL \rightarrow NSIDC: Continued **Excellent**

Test Results:

Source \rightarrow Dest	Medians of daily tests (mbps)			Requirement
	Best	Median	Worst	
JPL PTH \rightarrow NSIDC-PTH	88.8	88.0	10.0	1.34
JPL PODAAC \rightarrow NSIDC-SIDADS	7.5	7.2	5.8	1.34

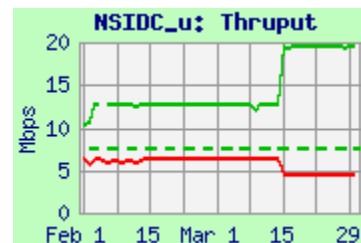
Comments: The test from JPL-PTH to NSIDC-SIDADS more fully assess the true network capability – the thrupt is much higher than from PODAAC. Thrupt from PODAAC was again stable this month after the previous improvement from the NISN WANR upgrade. The rating remains “Excellent”.



3.3) NSSTC → NSIDC:Ratings: NSSTC → NSIDC: Continued **Good**Web Pages: http://ensight.eos.nasa.gov/Missions/aqua/NSIDC_u.shtml**Test Results:**

Source → Dest	Medians of daily tests (mbps)			Req.
	Best	Median	Worst	
NSSTC → NSIDC DAAC (iperf)	19.6	19.4	5.0	7.5
NSSTC → NSIDC DAAC (ftp)	4.6	4.6	4.4	

Comments: NSSTC (Huntsville, AL) sends AMSR-E L2/L3 data to NSIDC. Median thrupt became more stable in early February, then Iperf improved in mid-March while ftp declined. This implies a route change with higher thrupt but also higher RTT (RTT measurements are not available, however). The median iperf thrupt remains more than 30 % over the requirement, so is rated "Good"

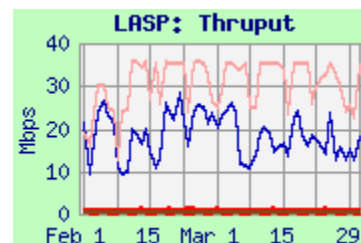
**3.4) LASP:**Ratings: GSFC → LASP: Continued **Excellent**ASF → LASP: Continued **Excellent**Web Page: <http://ensight.eos.nasa.gov/Organizations/production/LASP.shtml>**Test Results:**

Source → Dest	Medians of daily tests (mbps)			Requirement
	Best	Median	Worst	
ASF → LASP	1.34	1.09	0.62	0.024
GSFC EDOS → LASP	34.7	16.6	6.0	0.4
GSFC PTH → LASP (iperf)	35.8	34.0	8.8	
GSFC PTH → LASP (sftp)	0.50	0.50	0.48	

Comments: The requirements are now divided into ASF and GSFC sources:

ASF → LASP: Thrupt from ASF to LASP is limited by ASF T1 circuit, rating "Excellent", due to the modest requirement.

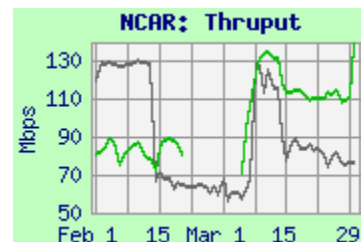
GSFC → LASP: GSFC → LASP iperf thrupt is noisy but well above the requirement; the rating continues "Excellent". But sftp thrupt is MUCH lower than iperf, due to window size limitations. A patch is available.

**3.5) NCAR:**Ratings: LaRC → NCAR: Continued **Excellent**GSFC → NCAR: Continued **Excellent**Web Pages: <http://ensight.eos.nasa.gov/Missions/terra/NCAR.shtml>**Test Results:**

Source → Dest	Medians of daily tests (mbps)			Requirement
	Best	Median	Worst	
LaRC → NCAR	117.8	113.1	91.5	5.4
GSFC → NCAR	90.0	80.8	56.3	5.1

Comments: NCAR (Boulder, CO) is a SIPS for MOPITT (Terra, from LaRC), and has MOPITT and HIRDLS QA (Aura, from GSFC) requirements. The thrupt from both sources improved in early March, then declined in mid March, due to routing changes, apparently in Colorado. (It improves again in April with retuning). Thrupt from LaRC is well above 3 x the requirement, so the rating remains "Excellent".

From GSFC the median thrupt is also well over 3 x the requirement, so that rating also remains "Excellent".



4) GSFC ↔ LaRC:

Ratings: GSFC → LaRC: Continued **Excellent**
 LDAAC → GDAAC: Continued **Excellent**

Web Pages: <http://ensight.eos.nasa.gov/Organizations/production/LARC.shtml>
<http://ensight.eos.nasa.gov/Organizations/production/LATIS.shtml>

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
GDAAC → LDAAC	415.7	301.7	169.9	32.0	313.5
GSFC-NISN → LaTIS	280.5	264.8	153.7		
GSFC-PTH → LaRC-PTH	93.4	93.3	82.5		
GSFC-PTH → LaRC-ANGe	319.3	300.0	228.0		
LDAAC → GDAAC	333.6	221.5	105.4		
LARC-ANGe → GSFC-PTH	273.3	246.6	198.8		

Requirements:

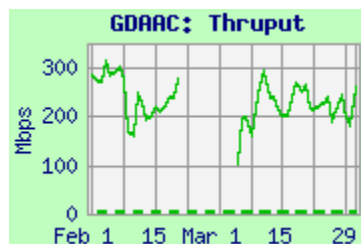
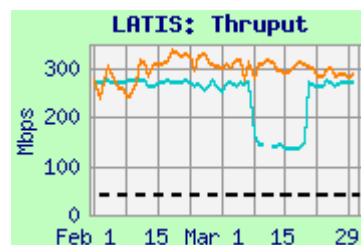
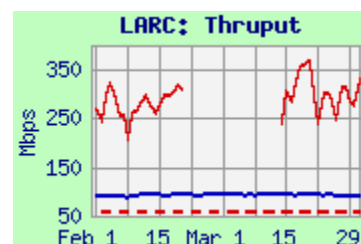
Source → Dest	Date	Mbps	Rating
GSFC → LARC (Combined)	Nov '06 – Feb '07	68.7	Good
LDAAC → GDAAC	FY '07	0.2	Excellent

Comments: The LaRC ECS DAAC was moved to the campus LAN (rather than being directly connected to NISN (and readdressed into LaRC campus address space) in late February. Testing was down for up to 3 weeks due to this transition.

GSFC → LaRC: The combined requirement had been split between LDAAC and LaTIS when the flows were on separate circuits, but is now treated as a single requirement as they have been both on PIP since Feb '05. The thrupt to the new ECS location is approximately the same as to the old one. The "Excellent" rating is based on the GDAAC to LaRC ECS DAAC thrupt, compared to the combined requirement. Note: the lower thrupt (around 90 mbps) to LaRC-PTH is limited by its 100 mbps LAN connection.

LaTIS: The thrupt to LaTIS was mostly stable this month, after it improved dramatically in late January, as a result of LaRC LAN reconfiguration. The initial thrupt was over 400 mbps, but testing was retuned lower (!) to avoid overtaxing the NISN LaRC router.

LaRC → GSFC: Performance from LDAAC → GDAAC was about the same after the LDAAC move as previously. The thrupt remained much more than 3 x this requirement, so the rating continues as "Excellent".



5) US ↔ JAXA:

Ratings: JAXA → US: Continued
US → JAXA: Continued

Good
Good

Web Pages

http://ensight.eos.nasa.gov/Organizations/production/JAXA_EOC.shtml
http://ensight.eos.nasa.gov/Organizations/production/JAXA_HEOC.shtml
http://ensight.eos.nasa.gov/Organizations/production/JPL_QSCAT.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
GSFC-EDOS-Mail → JAXA-DDS	5.14	4.84	3.90	0.26	4.89
GSFC-EDOS → JAXA-azusa	8.04	7.68	4.13		
GSFC-ENPL → JAXA-azusa	76.4	57.3	22.7		
GSFC-PTH → JAXA-azusa	54.5	34.9	17.3		
GSFC-PTH → JAXA (sftp)	0.84	0.83	0.79		
JAXA-DDS → JPL-QSCAT	3.54	3.50	3.11		
JAXA-DDS → GSFC-DAAC	2.08	2.07	1.86		
JAXA-azusa → GSFC-MAX	8.93	8.87	8.31		

Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → JAXA	Nov '03 – Mar '08	1.99	Good
JAXA → US	Nov '03 – Mar '08	1.28	Good

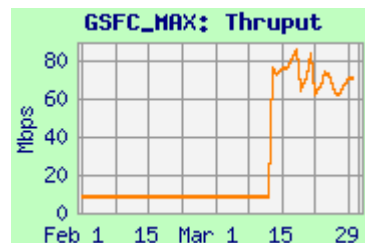
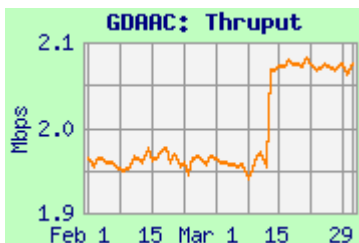
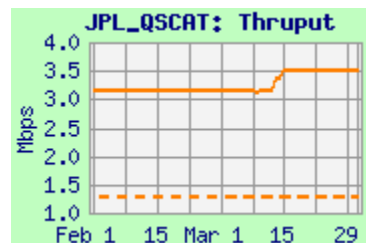
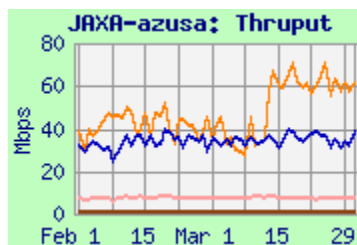
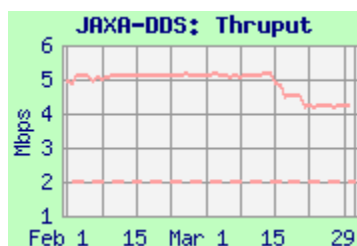
Comments: On approx March 13, JAXA changed its route to NASA to use Slnet to NY to Abilene, rather than APAN to LA to Abilene. This slightly increased RTT, but also allowed much improved throughput. The throughput improvement is suspected to relate to the way JAXA connects to these two networks, because both of them have 10 Gig circuits to the US.

Curiously, the route from US to JAXA seems to have made the inverse switch at the same time.

US → JAXA: DDS: Performance from GSFC dropped in mid March, due to the RTT increase – it is limited by TCP window size and 10 mbps Ethernet on JAXA's DDS node, and the GSFC-EDOS-Mail node. Thruput continued to be above the requirement, but below 3 x the requirement; so the rating remains "Good".

Azusa: Performance from GSFC-PTH and GSFC-ENPL to the JAXA azusa test node is not limited by a 10 mbps Ethernet, so its much higher performance more accurately shows the capability of the networks. But throughput using sftp between these same nodes is much lower, limited by ssh window size. A patch is available, but is not installed

JAXA → US: Performance improved with the switch from APAN to Slnet and from DDS is limited by TCP window size and 10 mbps Ethernet (but it has not yet been returned to fully utilize the increased network capability). The throughput from JAXA to JPL was more than 30% over the requirement, but less than 3 x, so the rating remains "Good".



6) ERSDAC ↔ US:Rating: Continued **Excellent**Web Page : <http://ensight.eos.nasa.gov/Organizations/production/ERSDAC.shtml>**US → ERSDAC Test Results:**

Source → Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
GDAAC → ERSDAC	34.9	29.6	18.4		
GSFC ENPL (FE) → ERSDAC	90.0	89.0	72.7	4.4	89.5
GSFC-EDOS → ERSDAC	5.8	5.8	3.4		

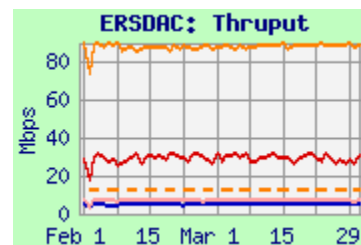
Requirements:

Source → Dest	FY	Mbps	Rating
GSFC → ERSDAC	'03 - '07	12.5	Excellent

Comments: Dataflow from GSFC to ERSDAC was switched to APAN in February '05, and the performance above is via that route.

The throughput from GDAAC is apparently limited by packet loss at the GigE to FastE switch at Tokyo-XP. The GigE GDAAC source does not see any bottlenecks until this switch (The Abilene and APAN backbones are 10 Gbps), and thus exceeds capacity of the switch's FastE output circuit. But the FastE connected GSFC-ENPL node is limited to 100 mbps by its own interface, so does not suffer performance degrading packet loss – its performance is much higher. Testing from EDOS to ERSDAC is currently limited by a 10 mbps Ethernet in its path – a waiver has been approved to enable use of the FastE interface.

The requirement now includes the level 0 flows which used to be sent by tapes. The throughput increased in Nov '06 (and got steadier from GSFC-ENPL at the same time). It continues to be more than 3 x this requirement, so the rating remains "Excellent".

**ERSDAC → US Test Results:**

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ERSDAC → JPL-ASTER IST	82.1	81.6	55.6
ERSDAC → EROS	87.3	84.9	73.9

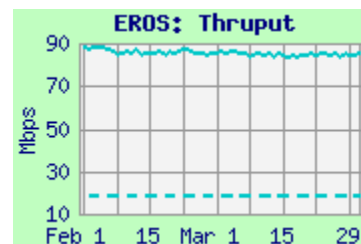
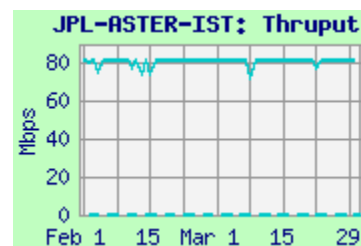
Requirements:

Source → Dest	Date	mbps	Rating
ERSDAC → EROS	FY '06	26.8	Excellent

Comments:

ERSDAC → JPL-ASTER-IST: This test was initiated in March '05, via APAN replacing the EBnet circuit. The results are much higher than previously via the 1 mbps ATM circuit, and should be considered "Excellent" (no requirement is specified at this time – but other IST requirements are 311 kbps)

ERSDAC → EROS: The results from this test (in support of the ERSDAC to EROS ASTER flow, replacing tapes) were very stable this month. Thruput improved to these present values in April '05 after the Abilene to NGIX-E connection was repaired. The median thruput is more than 3 x the requirement, so the rating remains "Excellent"



7) ASFRating: Continued **Excellent**Web Page: <http://ensight.eos.nasa.gov/Organizations/production/ASF.shtml>

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
GSFC-PTH → ASF	1.46	1.44	1.31
ASF → LASP	1.34	1.09	0.62

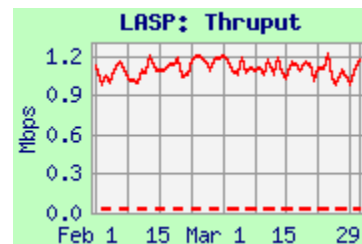
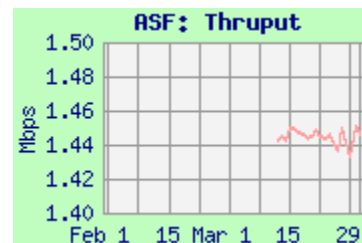
Comments: **GSFC to ASF:** Testing to ASF transitioned to IOnet in April '06 – accordingly, testing was discontinued from ASF to NOAA and JPL-SEAPAC; also user flow data is no longer available.

Performance to ASF has been consistent with the T1 (1.5 mbps) circuit capacity. Testing resumed from GSFC-PTH in March, after the CSAFS node switch at the end of January, with very similar results.

ASF to LASP: Performance was stable; the rating remains “Excellent”.

Requirements:

Source → Dest	Date	kbps	Rating
ASF → LASP	FY '07	24	Excellent

**8) Other SIPS Sites:**

Web Pages <http://ensight.eos.nasa.gov/Missions/aqua/RSS.shtml>
http://ensight.eos.nasa.gov/Missions/aura/KNMI_OMIPDR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			Requirement	Rating
	Best	Median	Worst		
JPL → RSS	5.7	5.2	2.3	2.4	Continued Good
OMISIPS → KNMI-ODPS	22.5	22.3	19.4	3.3	Continued Excellent

Comments:

8.1 RSS: RSS (Santa Rosa, CA) is a SIPS for AMSR-E (Aqua), receiving data from JPL, and sending its processed results to GHCC (aka NSSTC) (Huntsville, AL). The NISN dedicated circuit from JPL to RSS was upgraded in August '05 from 2 T1s (3 mbps) to 4 T1s (6 mbps) to accommodate the larger RSS to GHCC flow. This month the thruput again was noisy but mostly stable.

The iperf thruput remains more than 30% above the requirement, so the rating remains “Good” (had dropped to “Low” in September '06 due to heavy user flow). User flow data remains unavailable on this circuit.

Note that with the present configuration (passive servers at both RSS and GHCC), the RSS to GHCC performance cannot be tested.

8.2 KNMI: KNMI (DeBilt, Netherlands) is a SIPS and QA site for OMI (Aura). The route from GSFC is via MAX to Abilene, peering in DC with Geant's 10Gbps circuit Frankfurt, then Surfnets via Amsterdam. The rating is now based on the results from OMISIPS at GSFC to the ODPS primary server, protected by a firewall. This was quite a bit lower than previously to the Backup server, which was outside the firewall. Thruput remains well above 3 x the requirement, rating “Excellent”.

